

WHAT IS CLAIMED IS:

1. A composition, comprising:

a thermoplastic polymer; and

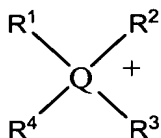
a polymeric anti-static salt.
2. The composition of claim 1, wherein the thermoplastic polymer is aromatic thermoplastic polymer, polycarbonate, aromatic polycarbonate, (co)polyestercarbonate, aromatic (co)polyestercarbonate, polyester, polyphenylene ether, polyphenylene ether/styrene blend, polyamide, polyketone, acrylonitrile-butadiene-styrene copolymer, blends thereof, or a combination comprising at least one of the foregoing polymers.
3. The composition of claim 1, wherein the polymeric anti-static salt comprises a polymeric anionic component and a cationic component.
4. The composition of claim 1, wherein the polymeric anti-static salt comprises a polymeric anionic component comprising carboxylate or sulfonate groups.
5. The composition of claim 4, wherein the polymeric anti-static salt comprises a backbone comprising substitution, wherein the substitution is linear, branched, or cyclic C₁-C₁₀ alkyl group, C₆-C₁₂ aryl group, (C₁-C₁₀ alkyl)C₆-C₁₂ aryl group, (C₆-C₁₂ aryl)C₁-C₁₀ alkyl group, or a combination of the foregoing groups, wherein the alkyl and aryl groups are substituted with 0, 1, 2, or 3 substitutents independently chosen from hydroxyl, halogen, C₁-C₆ alkyl, C₁-C₆ haloalkyl, and C₁-C₆ alkoxy.

6. The composition of claim 1, wherein the polymeric anti-static salt comprises a polymeric anionic component derived from poly(meth)acrylic acid, polyacrylic acid, poly(ethyl)acrylic acid, poly(maleic acid), poly(vinyl sulfonic acid), or poly(4-styrene sulfonic acid).

7. The composition of claim 1, wherein the polymeric anti-static salt is the reaction product of ionic monomer and a polymerization initiator, wherein the ionic monomer comprises reactive functionality and a salt moiety.

8. The composition of claim 7, wherein the reactive functionality is an epoxy group, a vinyl group, an acrylate group, an (alkyl)acrylate group, an allylic group, a styrenic group, an acrylamide group, an (alkyl)acrylamide group, a crotyl group, or a combination comprising at least one of the foregoing groups.

9. The composition of claim 7, wherein the salt moiety is a carboxylate salt or a sulfonate salt comprising a phosphonium or ammonium cationic component according to the following structure:

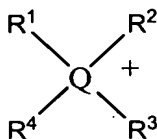


wherein Q is nitrogen or phosphorus; and R¹, R², R³, and R⁴ are each independently a C₁-C₂₀ alkyl, a (C₆-C₁₂ aryl)C₁-C₁₀ alkyl group, a (C₁-C₁₀ alkyl)C₆-C₁₂ aryl group, or a C₆-C₁₂ aryl group.

10. The composition of claim 7, wherein the ionic monomer further comprises a linking group linking the reactive functionality and the salt moiety; wherein the linking group comprises ethylene glycol units, divalent (C₁-C₂₀) alkyl, divalent (C₆-C₁₂) aryl, divalent (C₁-C₁₀ alkyl)C₆-C₁₂ aryl, divalent (C₆-C₁₂ aryl)C₁-C₁₀ alkyl, divalent (C₁-C₁₀ alkoxy)C₆-C₁₂ aryl, or divalent (C₆-C₁₂ aryloxy)C₁-C₁₀ alkyl.

11. The composition of claim 1, wherein the polymeric anti-static salt comprises a phosphonium or ammonium cationic component.

12. The composition of claim 11, wherein the phosphonium or ammonium cationic component comprises a compound according to the following structure:



wherein Q is nitrogen or phosphorus; and R¹, R², R³, and R⁴ are each independently a C₁-C₂₀ alkyl, a (C₆-C₁₂ aryl)C₁-C₁₀ alkyl group, a (C₁-C₁₀ alkyl)C₆-C₁₂ aryl group, or a C₆-C₁₂ aryl group.

13. The composition of claim 12, wherein the phosphonium cationic component is tetramethyl phosphonium, tetraethyl phosphonium, tetrapropyl phosphonium, tetrabutyl phosphonium, triethylmethyl phosphonium, tributylmethyl phosphonium, tributylethyl phosphonium, trioctylmethyl phosphonium, trimethylbutyl phosphonium, trimethyloctyl phosphonium, trimethylauryl phosphonium, trimethylstearyl phosphonium, triethyloctyl phosphonium, tetraphenyl phosphonium, triphenylmethyl phosphonium, triphenylbenzyl phosphonium, tributylbenzyl phosphonium, or combinations comprising at least one of the foregoing phosphonium cation components.

14. The composition of claim 12, wherein the ammonium cationic component is tetramethyl ammonium, tetraethyl ammonium, tetrapropyl ammonium, tetrabutyl ammonium, triethylmethyl ammonium, tributylmethyl ammonium, tributylethyl ammonium, trioctylmethyl ammonium, trimethylbutyl ammonium, trimethyloctyl ammonium, trimethylauryl ammonium, trimethylstearyl ammonium, triethyloctyl ammonium, tetraphenyl ammonium, triphenylmethyl ammonium, triphenylbenzyl ammonium, tributylbenzyl ammonium, or combinations comprising at least one of the foregoing ammonium cation components.

15. The composition of claim 1, wherein the amount of polymeric anti-static salt present in the composition is about 0.1 to about 10 weight percent based on the total weight of the composition.

16. An article prepared from the composition of claim 1.

17. A composition, comprising:

a polycarbonate, an aromatic polycarbonate, a (co)polyestercarbonate, an aromatic (co)polyestercarbonate, blends thereof, or a combination comprising at least one of the foregoing polymers; and

about 0.1 to about 10 weight percent of a polymeric anti-static salt based on the total weight of the composition,

wherein the polymeric anti-static salt comprises a polymeric anionic component derived from poly(meth)acrylic acid, polyacrylic acid, poly(ethyl)acrylic acid, poly(maleic acid), poly(vinyl sulfonic acid), or poly(4-styrene sulfonic acid); and a phosphonium or ammonium cationic component; or wherein the polymeric anti-static salt is the reaction product of ionic monomer, wherein the ionic monomer comprises a reactive functionality and a salt moiety.

18. A method of making a transparent, anti-static article, comprising:

blending a thermoplastic polymer and a polymeric anti-static salt to form a blend; and

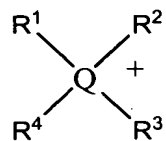
molding the blend to form an article.

19. A method of preparing a polymeric anti-static salt, comprising:

polymerizing ionic monomers, wherein the ionic monomer comprises reactive functionality and a salt moiety,

wherein the reactive functionality is an epoxy group, a vinyl group, an acrylate group, an (alkyl)acrylate group, an allylic group, a styrenic group, an acrylamide group, an (alkyl)acrylamide group, a crotyl group or a combination comprising at least one of the foregoing groups; and

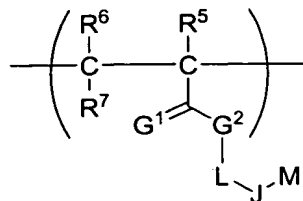
wherein the salt moiety is a carboxylate salt or a sulfonate salt comprising a phosphonium or ammonium cationic component according to the structure:



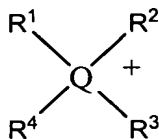
wherein Q is nitrogen or phosphorus; and R¹, R², R³, and R⁴ are each independently a C₁-C₂₀ alkyl, a (C₆-C₁₂ aryl)C₁-C₁₀ alkyl group, a (C₁-C₁₀ alkyl)C₆-C₁₂ aryl group, or a C₆-C₁₂ aryl group.

20. A polymeric anti-static salt prepared by the method of claim 19.

21. A polymeric anti-static salt, comprising repeating units according to the structure:



wherein R^5 is H or $(\text{C}_1\text{--C}_6)$ alkyl; R^6 is H or $(\text{C}_1\text{--C}_6)$ alkyl; R^7 is H or $(\text{C}_1\text{--C}_6)$ alkyl; G^1 is O or S; G^2 is O, S or NR^8 , wherein R^8 is H or $(\text{C}_1\text{--C}_6)$ alkyl; L is one or more units of ethylene glycol, divalent $(\text{C}_1\text{--C}_{20})$ alkyl, divalent $(\text{C}_6\text{--C}_{12})$ aryl, divalent $(\text{C}_1\text{--C}_{20}$ alkoxy) $\text{C}_1\text{--C}_{20}$ alkyl, divalent $(\text{C}_1\text{--C}_{10}$ alkyl) $\text{C}_6\text{--C}_{12}$ aryl, divalent $(\text{C}_6\text{--C}_{12}$ aryl) $\text{C}_1\text{--C}_{10}$ alkyl, divalent $(\text{C}_1\text{--C}_{10}$ alkoxy) $\text{C}_6\text{--C}_{12}$ aryl, or divalent $(\text{C}_6\text{--C}_{12}$ aryloxy) $\text{C}_1\text{--C}_{10}$ alkyl; J is a carboxylate or a sulfonate group; and M is an ammonium or phosphonium cationic component according to the structure:



wherein Q is nitrogen or phosphorus; and R^1 , R^2 , R^3 , and R^4 are each independently a $\text{C}_1\text{--C}_{20}$ alkyl, a $(\text{C}_6\text{--C}_{12}$ aryl) $\text{C}_1\text{--C}_{10}$ alkyl group, a $(\text{C}_1\text{--C}_{10}$ alkyl) $\text{C}_6\text{--C}_{12}$ aryl group, or a $\text{C}_6\text{--C}_{12}$ aryl group.

22. The polymeric anti-static salt of claim 21, wherein R^5 is H or methyl, R^6 and R^7 are H, G^1 and G^2 are O; L is a divalent $(\text{C}_1\text{--C}_{10}$ alkoxy) $\text{C}_6\text{--C}_{12}$ aryl; J is a sulfonate group; and M is a phosphonium cationic component.